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(54) **DUVET COVER SYSTEM HAVING  
CUSTOMIZABLE VARIABLE  
PERFORMANCE**

(52) **U.S. Cl.**  
CPC ..... *A47G 9/023* (2013.01)

(57) **ABSTRACT**

A duvet cover system having customizable variable performance includes a cover layer and a duvet insert received in a pocket of the cover layer. The duvet insert includes first and second insert portions that may be removably connected to one another along a junction such that the insert portions cover different sides of the bed when the system is spread over the bed. The first insert portion defines at least two quantifiable performance factors including a first thermal retention value and a first air permeability value, and the second insert portion defines at least two quantifiable performance factors in a similar manner. However, these quantifiable performance factors of the first and second insert portions are different from one another to provide the different sleep experiences desired by users on opposite sides of the bed. The system still provides the desired appearance of a conventional duvet when fully assembled.

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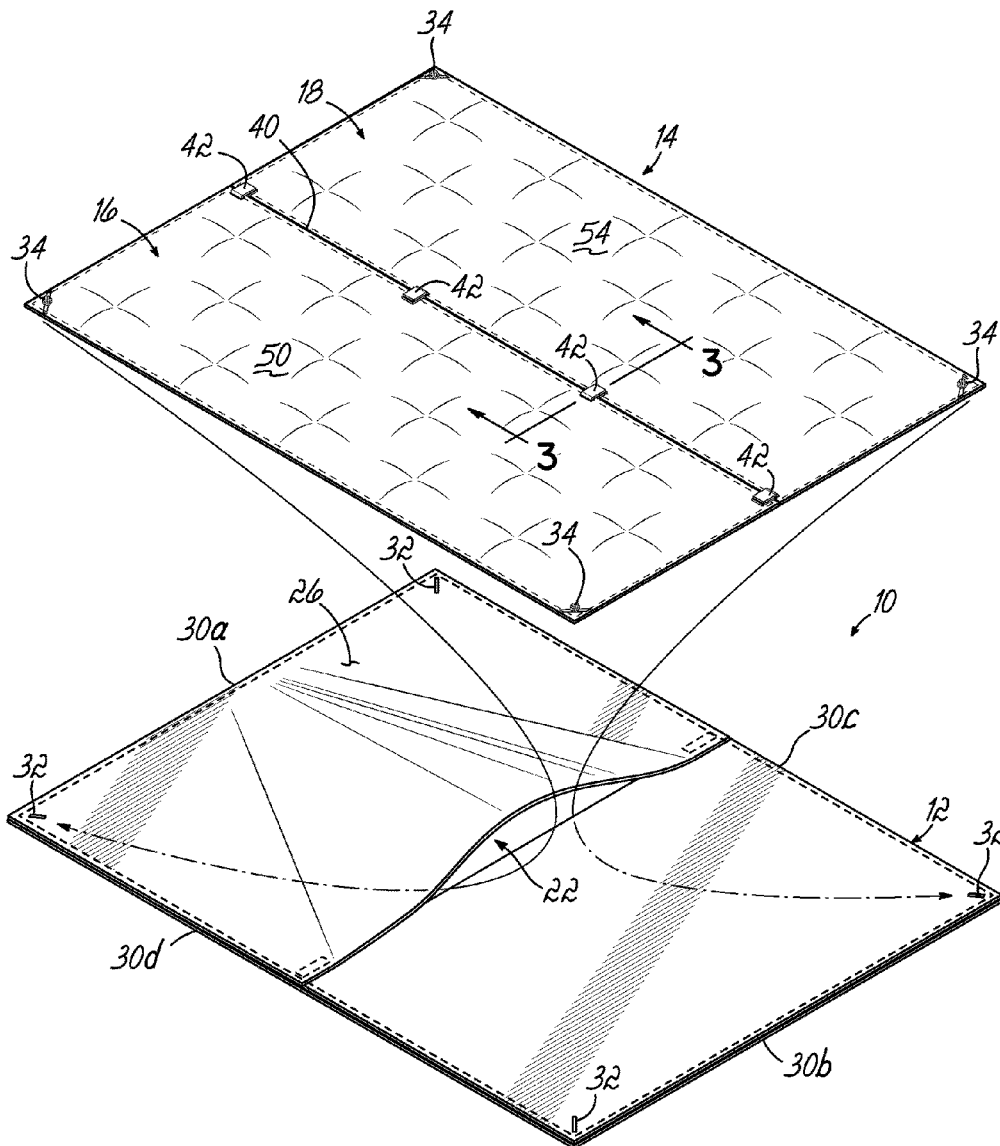
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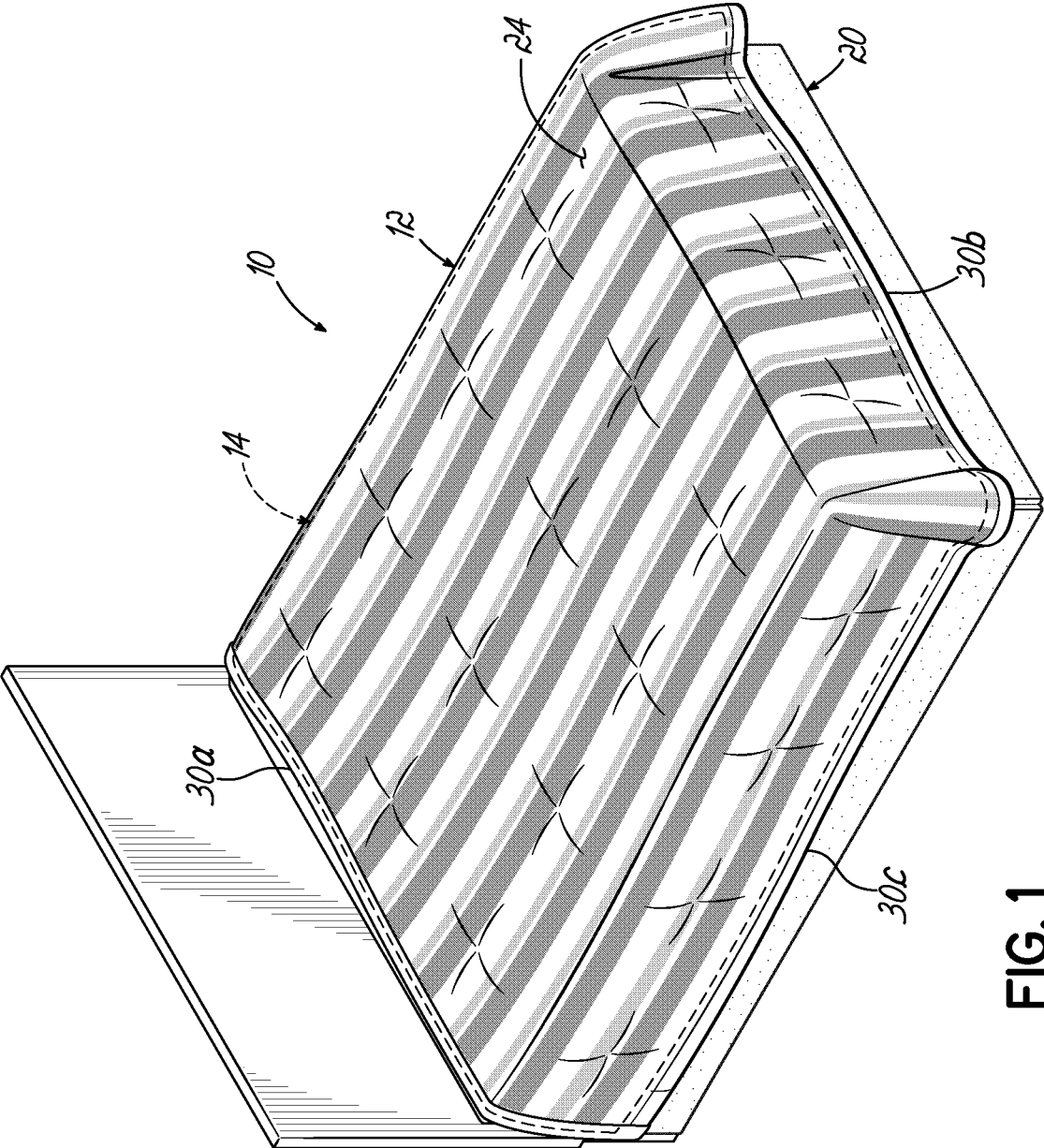


FIG. 1

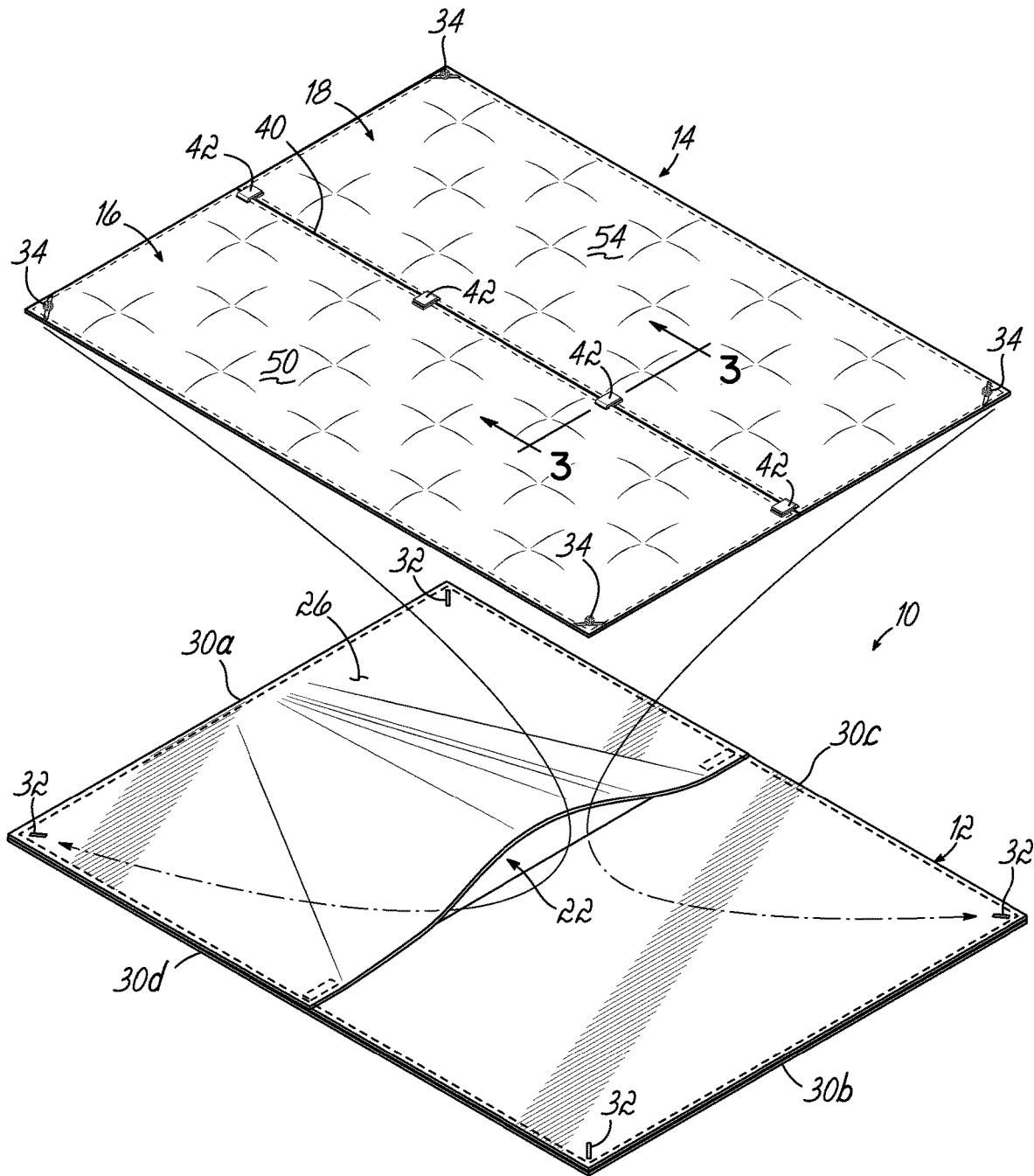


FIG. 2

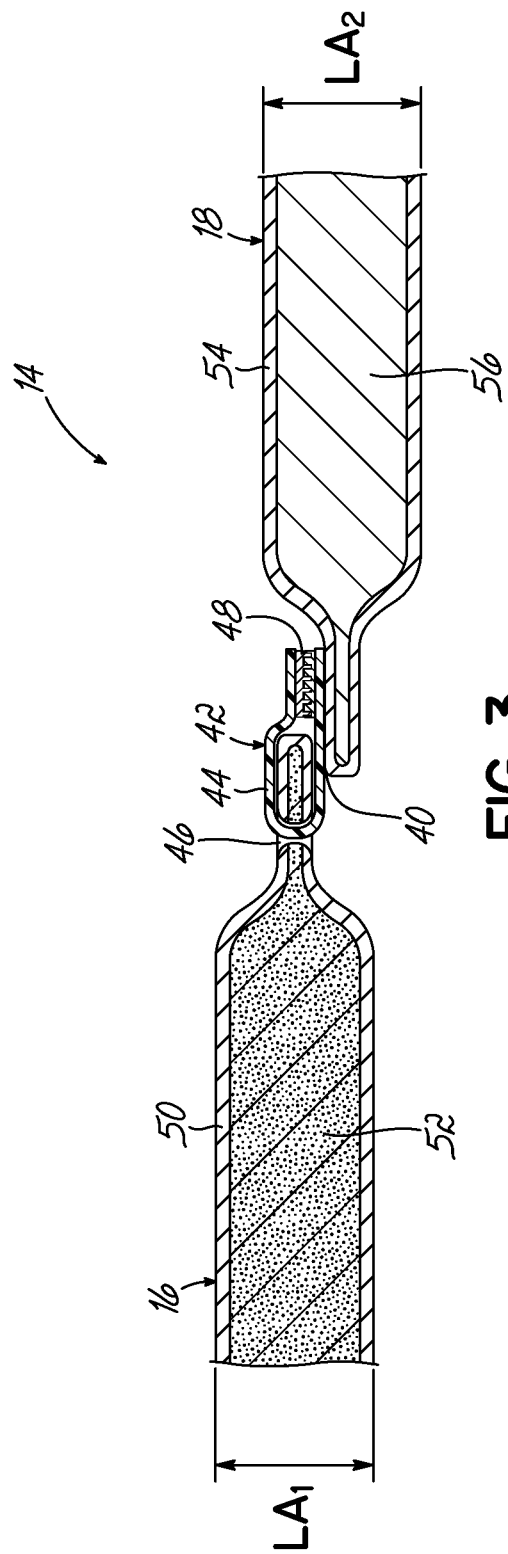


FIG. 3

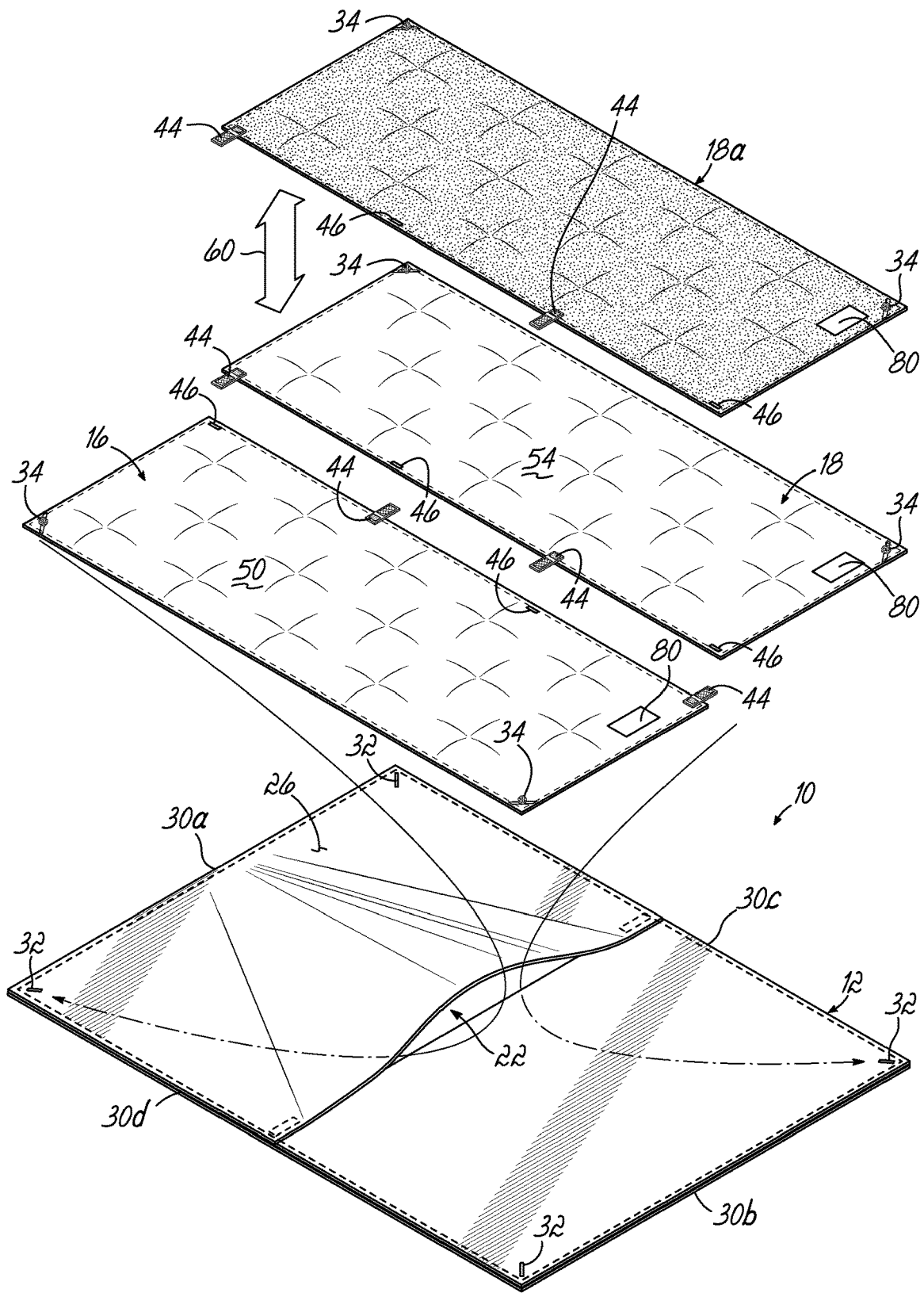


FIG. 4

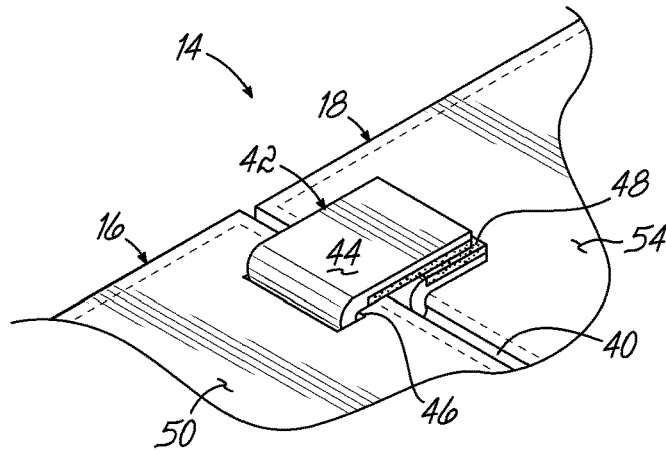


FIG. 5

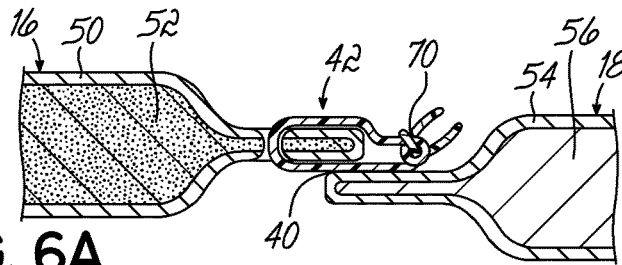


FIG. 6A

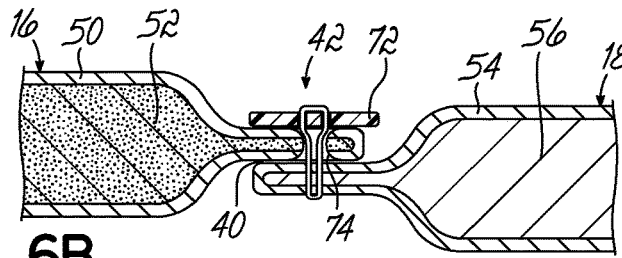


FIG. 6B

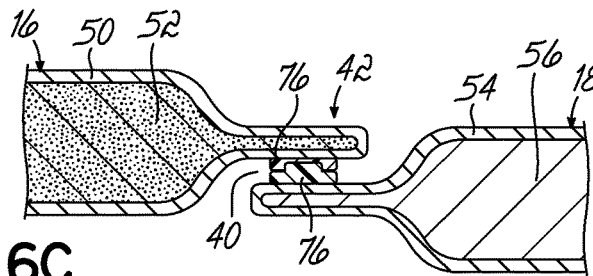


FIG. 6C

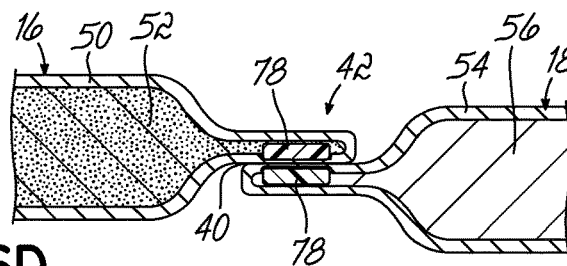


FIG. 6D

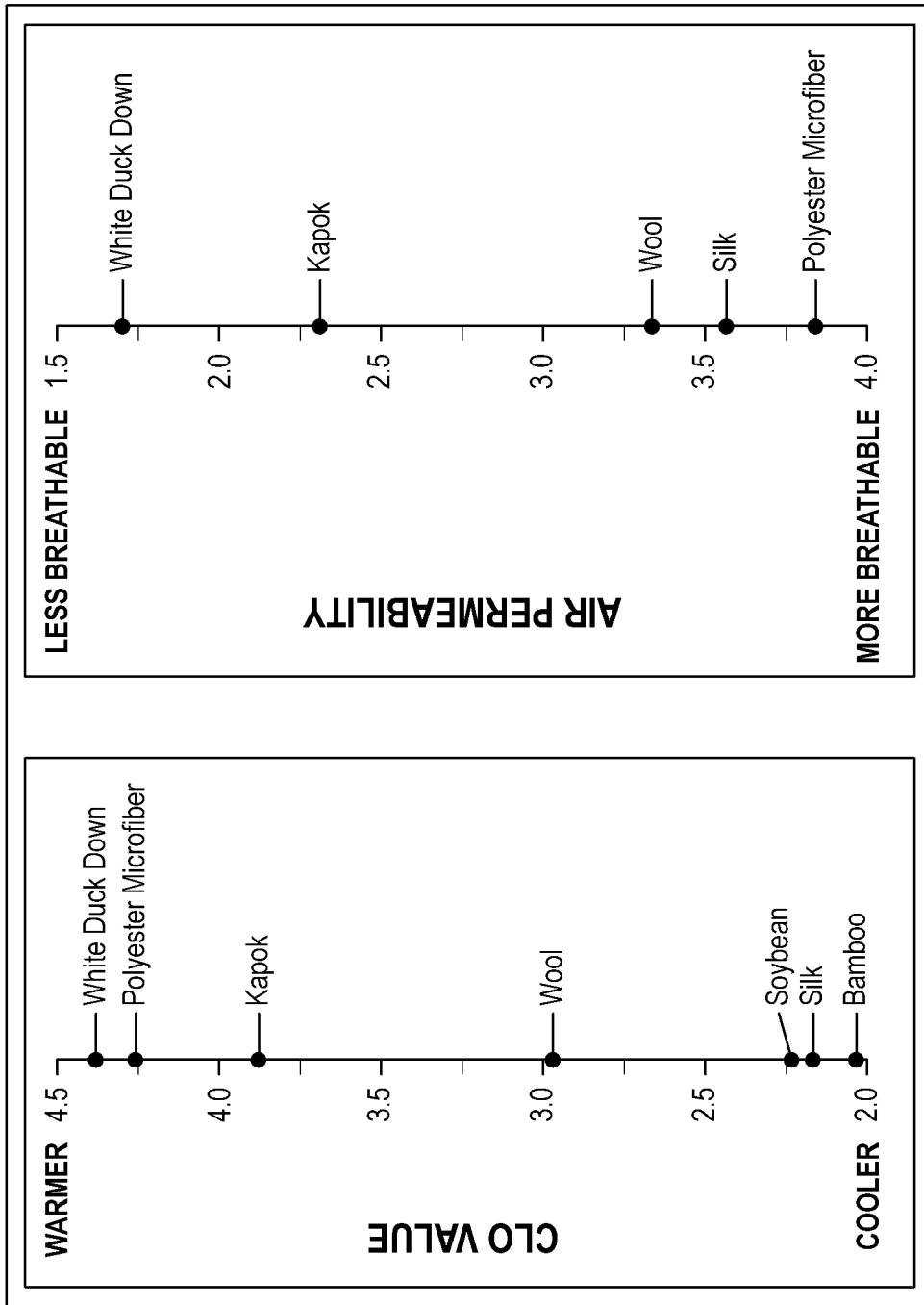


FIG. 7

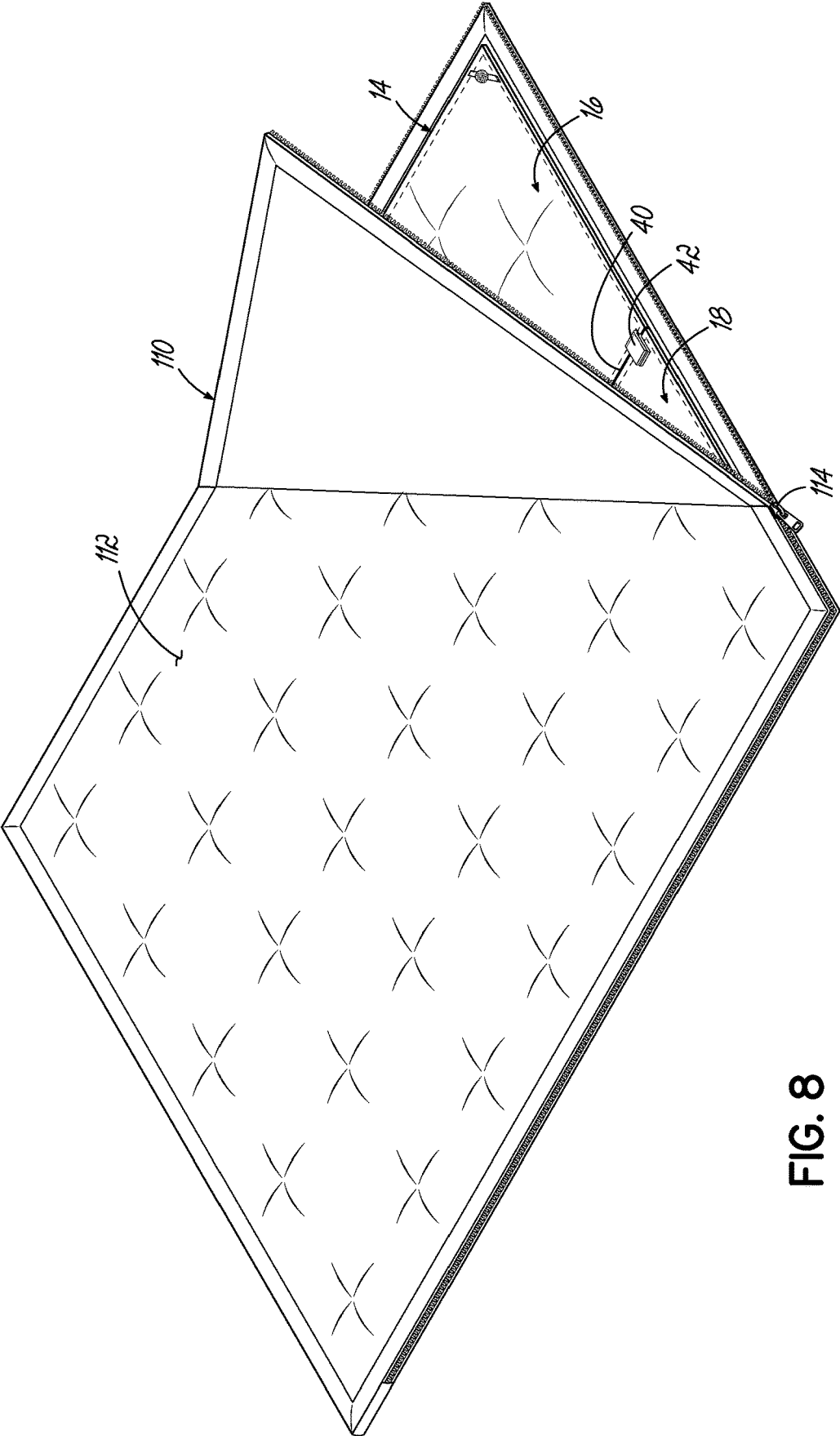


FIG. 8



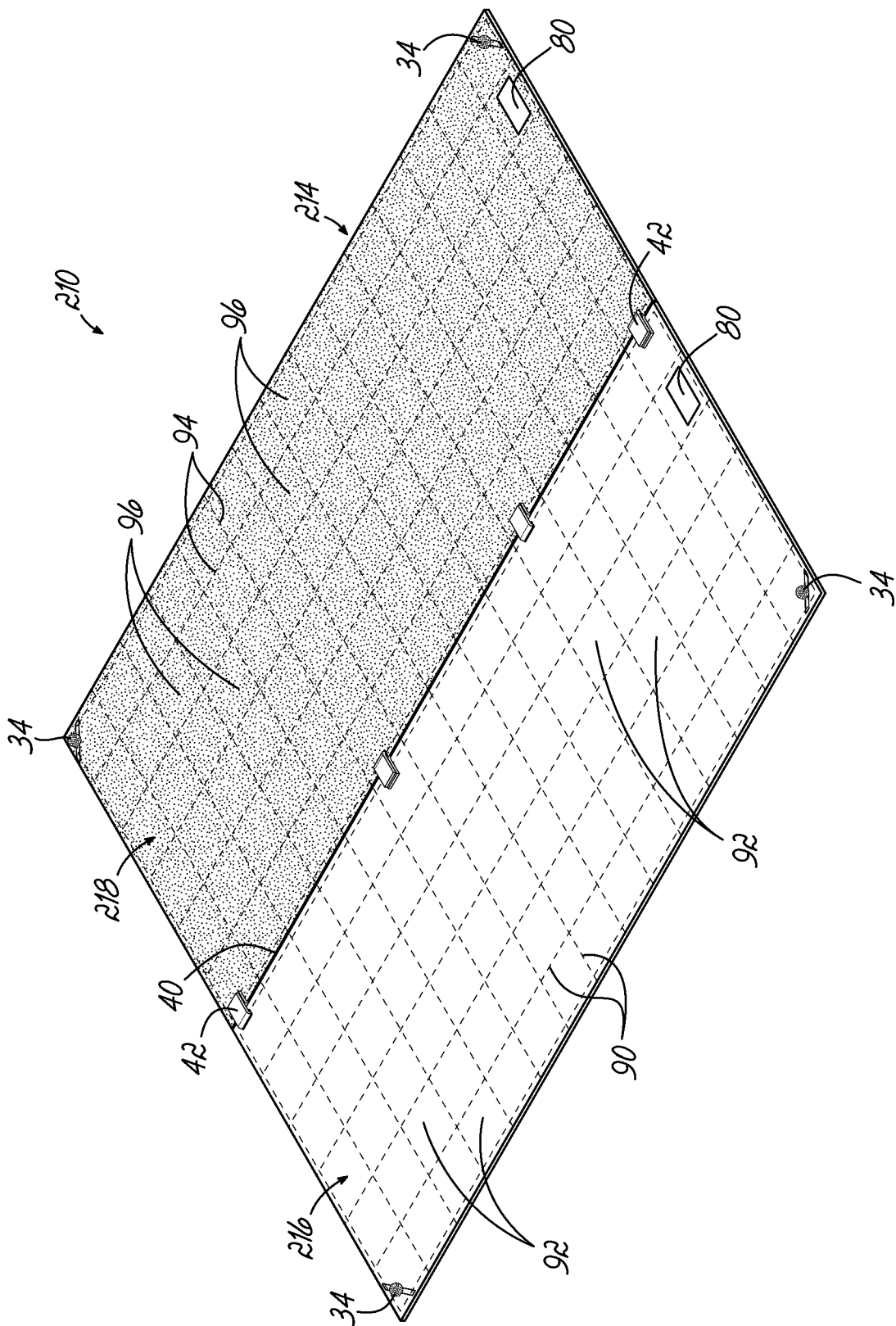


FIG. 9

**DUVET COVER SYSTEM HAVING  
CUSTOMIZABLE VARIABLE  
PERFORMANCE**

TECHNICAL FIELD

**[0001]** The present invention relates generally to linens used with bedding and, more specifically, to duvet cover systems used with bedding in various contexts.

BACKGROUND

**[0002]** Blankets and comforters, such as down comforters, provide an extra layer of comfort and warmth to those who choose to use them while sleeping. For example, a down comforter provides more warmth and comfort as compared to sleeping under only a top sheet of a sheet set applied to a bed. However, because of the bulk/size of comforters and blankets, these bedding elements can be very difficult to properly clean. In order to diminish the need for direct cleaning and extend the life thereof, these blankets and comforters are often covered with (and/or inserted within) what is known as a duvet cover. The duvet cover protects the blanket or comforter while, at the same time, contributes an aesthetically appealing element to the bed when positioned atop the bed. There are many different versions of duvet cover designs available, each with different options for how the blanket or comforter is inserted or secured in position when in use on the bed.

**[0003]** Typically, the blanket or comforter inserted into a duvet cover is a single, unitary element that extends throughout a pocket defined within the duvet cover. The single piece blanket or comforter provides certain performance features to the duvet cover system. For example, a certain amount of thermal retention may be provided (which is measured as “CLO values” in the U.S. and “tog values” in European locales). Other performance factors such as air permeability/breathability and moisture wicking can also be provided by the blanket or comforter within the duvet cover. Thus, a different blanket or comforter can be inserted into a duvet cover to change the performance features such as when seasons change and cause a user to desire several different performance features (e.g., higher thermal retention in wintertime).

**[0004]** Many beds are sized to sleep two or more users, often with one user on each side of the bed. However, every user is unique in body chemistry and sleep preferences. In one example, one user may sleep better when warmer while another user may sleep better when cooler or when better air flow/circulation is present. The conventional duvet cover system designs offer only one set of performance features, which is often not desirable for one of the users of the bed. This often results in one of the users being uncomfortable under the duvet cover system, if not both (in cases where both users have compromised on some of the performance factors to make both users marginally comfortable). Therefore, it would be desirable to improve duvet cover systems to provide variable performance that can be configured for users desiring different performance features during sleep on a bed.

**[0005]** Several designs have been more recently produced in an effort to provide variable performance in a duvet cover system. For example, British Patent Application No. GB 2 369 293 to Dunn shows several duvet cover systems including one with separated pockets on a cover layer for receiving

two half-blankets defining different thermal retention values, and another with two half-blankets (again, defining different thermal retention values) zipped together along their length before insertion into the pocket of a cover layer. In another example, U.S. Pat. No. 6,862,760 to Bradley et al. describes that two comforter sections defining different thermal resistance can be connected along an overlapped junction. Additionally, U.S. Pat. No. 8,707,480 to Graddy shows a multi-layer blanket with a base layer and straps that enable addition of further blanket leaves/layers on either side of the bed, e.g., more or fewer blanket layers can be provided on the two sides of the bed.

**[0006]** These more recent designs continue to need improvement in the field of bedding covers. In this regard, the elongated zipper or overlap at the junction causes variations in thickness or a rigid connection that is discernable to users of the bed after the connected portions are placed within a cover layer. Designs like the one shown in the Graddy patent also fail to provide a consistent loft or thickness across the width of the bed, which means any duvet cover system using those types of designs will not provide the desirable aesthetic appearance of a conventional duvet. Notably, all the prior designs focus on adjusting only the thermal retention or conductivity of the sides or portions of the blanket/duvet. As a result, such designs have not found widespread adoption in the marketplace because they do not actually provide fully desirable and customizable sleep experiences for different users of the bed, plus they do not look or function sufficiently like conventional duvet cover system designs in the ways that users find desirable to maintain.

**[0007]** It would be desirable, therefore, to provide a new duvet cover system that addresses these and other drawbacks of conventional designs.

SUMMARY

**[0008]** To achieve the above purpose, the present invention provides the following technical solutions, in one embodiment: a duvet cover system is provided for covering a bed is provided to allow for multiple users of the bed to have desirable sleep experiences. To this end, the system includes a cover layer configured to receive a fill layer in the form of a blanket or comforter. The cover layer is configured to at least substantially enclose the fill layer and provide a desired aesthetic appearance to the duvet cover system. The system further includes a duvet insert defining the fill layer. The duvet insert includes a first insert portion and a second insert portion removably connected to one another along a junction such that the first insert portion covers a first side of the bed and the second insert portion covers a second side of the bed when the system is spread over the bed. The first insert portion includes a first fill material having a first fill volume to thereby define at least two quantifiable performance factors for the first insert portion, including a first thermal retention value and a first air permeability value. The second insert portion includes a second fill material having a second fill volume to thereby define at least two quantifiable performance factors for the second insert portion, including a second thermal retention value and a second air permeability value. The quantifiable performance factors of the first and second insert portions are different from each other to provide different sleep experiences for users located on the first and second sides of the bed under the duvet cover system.

**[0009]** In one aspect, another of the quantifiable performance factors for the first insert portion is a first loft amount generated by the first fill material and the first fill volume. The first and second loft amounts are substantially equal such that the duvet cover system defines a consistent aesthetic appearance on first and second sides of the bed when the duvet cover system is spread over the bed.

**[0010]** In another aspect, the first and second insert portions are removably connected to one another by a plurality of fastening elements that are spaced apart from one another along a length of the junction. Each of the plurality of fastening elements further comprises a flexible strap extending from one of the first and second insert portions and a receiving aperture formed on the other of the first and second insert portions. The flexible strap extends through the receiving aperture and then is secured in position on one of the first and second insert portions to hold the first and second insert portions together. The plurality of fastening elements may be defined by at least one of: hook and loop fastener elements, ties, buttons, snaps and magnets.

**[0011]** In yet another aspect, the cover layer includes a single, unitary pocket configured to receive and substantially enclose an entirety of the duvet insert. In a further aspect, the first and second fill materials include at least one of: duck down, polyester, wool, kapok, soybean, silk and bamboo. The at least two quantifiable performance factors for the first and second insert portions may further include a loft amount, weight, and/or texture.

**[0012]** In another aspect, the first insert portion further includes a cover fabric that encloses the first fill material, and the second insert portion further includes a cover fabric that encloses the second fill material. The cover fabrics of the first and second insert portions help define the at least two quantifiable performance factors. For example, these quantifiable performance factors may also include wicking and/or temperature regulation. The cover fabrics for the first and second insert portions include at least one of: cotton, cotton blends, microfiber polyester, and Lyocell.

**[0013]** In a further aspect, the first and second insert portions are removably connected to one another by a plurality of fastening elements, which are defined by non-hardened or non-rigid materials such that a presence of the fastening elements along the junction cannot be detected by users located on the bed and under the duvet cover system. The first and second insert portions each defines a plurality of peripheral edges, one of which is located along the junction. The others of the plurality of peripheral edges do not include any fastening elements for connecting the first and second insert portions together. This configuration allows for the duvet insert to feel like a single-part, unitary blanket or comforter to the user, thereby providing a familiar and comfortable feel to the duvet cover system.

**[0014]** In one aspect, the cover layer includes a decorative pattern to provide a desired aesthetic appearance to the bed when the duvet cover system is spread over the bed. The duvet cover system of the embodiments of this invention provide a fully customizable sleep experience with multiple quantifiable performance factors tailored to the specific users on the different sides of the bed, while simulating in look and feel a conventional duvet design in a desirable manner for users.

**[0015]** In yet another aspect, each of the first and second insert portions includes a fill identification element that identifies a performance specification defined by the at least

two quantifiable performance factors for the insert portion. The fill identification element may take different forms, such as a label, or color-coded threading or portions of the first and second insert portions.

**[0016]** In another embodiment, a duvet cover system includes a cover layer configured to receive a fill layer in the form of a blanket or comforter. The cover layer is configured to at least substantially enclose the fill layer and provide a desired aesthetic appearance to the duvet cover system. The system further includes a duvet insert defining the fill layer. The duvet insert includes a first insert portion including a plurality of first quilt boxes defined by a first cover fabric, and a second insert portion including a plurality of second quilt boxes defined by a second cover fabric. The first and second insert portions are positioned such that the first insert portion covers a first side of the bed and the second insert portion covers a second side of the bed when the system is spread over the bed. The first quilt boxes are filled with a first fill material having a first fill volume to thereby define at least two quantifiable performance factors for the first insert portion, including a first thermal retention value and a first air permeability value. The second quilt boxes are filled with a second fill material having a second fill volume to thereby define at least two quantifiable performance factors for the second insert portion, including a second thermal retention value and a second air permeability value. The quantifiable performance factors of the first and second insert portions are different from each other to provide different sleep experiences for users located on the first and second sides of the bed under the duvet cover system. The first and second insert portions may be removably connected to one another along a junction, in one aspect, such as by fastening elements spaced apart from one another along a length of the junction.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0017]** Various additional features and advantages of the invention will become more apparent to those of ordinary skill in the art upon review of the following detailed description of one or more illustrative embodiments taken in conjunction with the accompanying drawings. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate one or more embodiments of the invention and, together with the general description given above and the detailed description given below, explain the one or more embodiments of the invention.

**[0018]** FIG. 1 is a top perspective view of a duvet cover system having customizable variable performance, in accordance with one embodiment of the invention, with the system shown in a fully assembled state combining a cover layer and a duvet insert while spread over a bed.

**[0019]** FIG. 2 is a bottom perspective view of the duvet cover system of FIG. 1, with the duvet insert removed from a pocket defined within the cover layer to show a disassembled state of the system, with this view showing further details of the first and second insert portions defining the duvet insert.

**[0020]** FIG. 3 is a detailed side cross-sectional view of a portion of the duvet cover system of FIG. 2, taken along line 3-3 in FIG. 2, showing further details of the junction between the first and second insert portions and one of the fastening elements at the junction.

[0021] FIG. 4 is a bottom perspective view of the duvet cover system of FIG. 1 in a disassembled state, and further showing an alternative insert portion replacing one of the first and second insert portions when a different sleep experience is desired for a user on the corresponding side of the system and bed.

[0022] FIG. 5 is a detailed top perspective view showing further details of one of the fastening elements at the junction in FIG. 2.

[0023] FIG. 6A is a side cross-sectional view showing an alternative type of fastening element that may be used in one embodiment of the duvet insert.

[0024] FIG. 6B is a side cross-sectional view showing another type of fastening element that may be used in another embodiment of the duvet insert.

[0025] FIG. 6C is a side cross-sectional view showing yet another type of fastening element that may be used in yet another embodiment of the duvet insert.

[0026] FIG. 6D is a side cross-sectional view showing a further type of fastening element that may be used in a further embodiment of the duvet insert.

[0027] FIG. 7 is a graphical plot showing test results of thermal retention (“CLO”) values for various fill materials and air permeability for various fill materials.

[0028] FIG. 8 is a bottom perspective view of a duvet cover system according to a further embodiment of the invention, with the cover layer partially zipped open to reveal the two-portion duvet insert located inside the system.

[0029] FIG. 9 is a bottom perspective view of a duvet insert according to another embodiment of the invention, showing further details of so-called quilt boxes that may define the insert portions.

#### DETAILED DESCRIPTION

[0030] FIGS. 1 through 5 show a duvet cover system 10 in accordance with one embodiment of the invention, the system 10 being configured to provide customizable variable performance to allow for different sleep experiences for users of a bed. To this end, the system 10 includes a cover layer 12 of any known design and an inventive duvet insert 14 defined by a first insert portion 16 and a second insert portion 18 that each define at least two quantifiable performance factors that are different, to be tailored to the desires and needs of the user on the corresponding side of the bed. These quantifiable performance factors include at least thermal retention value and air permeability value. The first and second insert portions 16, 18 are removable from one another so that one of or both the insert portions 16, 18 can be replaced with the changing seasons or other desires of the users. Advantageously, the system 10 provides users with different sleep experiences and performance factors while providing a substantially identical look and feel as conventional duvets with a single-piece blanket or comforter insert. This “conventional” and desirable aesthetic appearance of the duvet cover system 10 is shown in FIG. 1, in which the system 10 is fully assembled and spread over a bed 20. Further details regarding this embodiment of the duvet cover system 10 will now be described with reference to the detailed views in FIGS. 2 through 5.

[0031] As shown most clearly in FIGS. 2 and 4, the cover layer 12 of the system 10 in this illustrated embodiment is a central access-type cover layer with an opening 22 into an internal pocket defined by the cover layer 12 located at a central position to make it easier to insert the fill layer in the

form of the duvet insert 14 into the pocket. This central access-type cover layer is described in the original Applicant’s own U.S. Patent Publication No. 2018/0255945 to Stewart, and further details regarding such a duvet cover design can be referenced in that prior publication. It will be understood that the duvet insert 14 of this invention is designed for use with cover layers 12 of all known and future designs, thereby increasing the marketplace and usability of the system 10 described herein. The central access version is shown as one example and briefly described in further detail below, but it should not be deemed as a limiting example.

[0032] Use of several descriptive terms, such as top, bottom, head, foot, side, upwardly, downwardly, horizontal, and/or vertical, for example, as it pertains to/describes the system 10 and its components, is from the viewpoint of when the system 10 is laid out on the bed 20, unless otherwise noted.

[0033] Returning with reference to FIG. 2, the cover layer 12 shown in this embodiment includes a top fabric layer 24 and a bottom fabric layer 26, which are assembled together such as by stitching along a periphery defined by a plurality of edges: including a head end edge 30a, a foot end edge 30b, and first and second side edges 30c, 30d extending between the head and foot end edges 30a, 30b. The stitch lines are shown in phantom for clarity but may be modified in other embodiments. The top fabric layer 24 may include printing or dyes that provide a desirable aesthetic appearance for the duvet cover system 10, as shown in FIG. 1. The cover layer 12 also includes a plurality of retention slots 32 located near the corners in the bottom fabric layer 26, which can optionally engage with a plurality of retention fastening elements 34 that may be provided along corner portions of the duvet insert 14 to reliably maintain the duvet insert 14 in a desired position within the pocket of the cover layer 12. It will be appreciated that such retention slots 32 and retention fastening elements 34 may be moved or omitted in other embodiments without departing from the scope of this invention.

[0034] Also shown in FIG. 2 is one embodiment of the duvet insert 14 in accordance with the duvet cover system 10 of this invention. The first and second insert portions 16, 18 are shown to be removably connected to one another along a junction 40 that extends lengthwise between the head end edge 30a and the foot end edge 30b when the system 10 is fully assembled. The first and second insert portions 16, 18 are each sized with about the same dimensions such that the first insert portion 16 is configured to overlie a first side of the bed 20 when the system 10 is fully assembled and spread over the bed 20, while the second insert portion 18 is configured to overlie a second side of the bed 20. The first and second insert portions 16, 18 provide at least two quantifiable performance factors that are different from one another, thereby providing a customizable and desirable sleep experience for different users on the two sides of the bed 20. As will be described in further detail below, these quantifiable performance factors include at least a thermal retention value (often referred to as a CLO value or a tog value) and an air permeability value, the latter being indicative of how breathable the duvet is while the former being indicative of how warm or cool the sleep experience will be when using the system 10. Advantageously, the duvet insert 14 continues to function and feel (to users) like a conven-

tional one-piece fill layer when the first and second insert portions 16, 18 are connected together as shown in FIG. 2.

[0035] With continued reference to FIG. 2 as well as FIG. 3, the first and second insert portions 16, 18 are connected together using a plurality of fastening elements 42 separated and spaced apart from one another along the length of the junction 40. In this embodiment, each fastening element 42 includes a flexible strap 44 extending from one of the first and second insert portions 16, 18 and a receiving aperture 46 formed on the other of the first and second insert portions 16, 18. As most readily understood from the cross section shown in FIG. 3, the flexible strap 44 of this embodiment includes self-securing means such as hook and loop fastener 48, which allows the flexible strap 44 to be threaded through the receiving aperture 46 and then folded over itself to secure the hook and loop fastener 48 together and thereby secure the first and second insert portions 16, 18 together at the junction 40. The self-securing means may be defined by other types of known elements, including but not limited to interlocking interdigitations, and further examples described below with reference to FIGS. 6A through 6D.

[0036] The spacing apart of the fastening elements 42 avoids creating a highly-rigid connection along the junction 40 that could then be discerned by users of the duvet cover system 10. Likewise, the use of flexible straps 44 and receiving apertures 46 in this embodiment allows for the removable connection of the first and second insert portions 16, 18 to be made without necessitating hardened or rigid materials to be used. As a result, the plurality of fastening elements 42 is configured to be indiscernible to users of the system 10 thanks to the lack of hardened and/or rigid materials along the junction 40. This arrangement for coupling the first and second insert portions 16, 18 is desirable because users will feel like the system 10 encloses a conventional one-piece blanket or comforter, thereby not adding any potential discomfort or unusual feel to the sleep experience when using the system 10.

[0037] Further details of the connection made by the fastening element 42 and the first and second insert portions 16, 18 are shown in FIG. 3. To this end, the first insert portion 16 includes a first cover fabric 50 that encloses a first fill material 52. The first fill material 52 can be selected from several different fill options and placed in the first cover fabric 50 at various fill weights. For example, the first fill material 52 may include one or more of duck down, polyester, wool, kapok, soybean, silk, bamboo, and similar insulative materials. The first cover fabric 50 may be provided in one or more of the following materials: cotton, cotton blends, microfiber polyester, Lyocell, and similar textile materials. Each of the first cover fabric 50 and the first fill material 52 may contribute to help define the quantifiable performance factors for the first insert portion 16. In further embodiments, a coating or treatment is applied to the first cover fabric 50 to help achieve the quantifiable performance factors. The first cover fabric 50 (and any surface treatments applied) may be selected to provide certain performance factors like wicking and temperature regulation, while the first fill material 52 and its fill weight may contribute to the thermal retention value and air permeability factor. Any number of selected combinations of materials for these elements of the first insert portion 16 may be selected to provide a highly customized set of quantifiable performance factors exhibited by that side of the duvet cover system 10.

[0038] Similarly, FIG. 3 also illustrates that the second insert portion 18 includes a second cover fabric 54 that encloses a second fill material 56. The second cover fabric 54 and second fill material 56 and its fill weight may be customized using the various options explained above for the first insert portion 16, and as such, a highly customized set of quantifiable performance factors can be achieved and exhibited by the other side of the duvet cover system 10. For example, a coating or treatment can be applied to the second cover fabric 54 to help achieve the quantifiable performance factors. Of course, the second insert portion 18 will advantageously exhibit some different performance factors than the first insert portion 16, including but not limited to the thermal retention value and/or the air permeability, thereby providing unique and desirable sleep experiences for users on both sides of the bed 20 and system 10.

[0039] The amount of the first and second fill materials 52, 56 may be diminished along the peripheral edges of the first and second cover fabrics 50, 54, thereby resulting in the narrowed thickness profile along the junction 40 even with the first and second insert portions 16, 18 partially overlapping in that region as shown in the cross section of FIG. 3. As a result, the overlap at the junction 40 and the fastening elements 42 do not project outwardly or bulge from the overall profile or thickness of the first and second insert portions 16, 18. Additionally, the first and second fill materials 52, 56 and fill volumes thereof are tailored such that the first insert portion 16 defines a first loft amount (schematically indicated as  $LA_1$ ) that is substantially equal to a second loft amount (schematically indicated as  $LA_2$ ) that is defined by the second insert portion 18. It will be readily appreciated that because the first and second fill materials 52, 56 may be different, the corresponding fill volumes are also likely different in view of the differing densities of the materials involved. The consistent first and second loft amounts are another quantifiable performance factor for each of the first and second insert portions 16, 18, and such is desirable because having the same first and second loft amounts results in a consistent aesthetic appearance on first and second sides of the bed 20 when the system 10 is fully assembled. To this end, users will not be able to discern that the duvet insert 14 is formed from the first and second insert portions 16, 18 instead of a single, unitary blanket or comforter, which provides the desirable aesthetic appearance associated with those conventional duvet designs.

[0040] Furthermore, the generally low profile of the junction 40 and the fastening elements 42 and the formation of such fastening elements 42 from non-rigid and non-hardened materials prevents users of the bed 20 and system 10 from discerning or feeling these elements when sleeping or laying under the fully-assembled system 10. This again is desirable because one of the objectives of the present invention is to simulate the look and feel of a conventional duvet while providing the improvements in sleep experience that has not been achieved by prior designs. The junction profile and the loft factors shown most clearly at FIG. 3 contribute to achieving these objectives.

[0041] The flexible straps 44 and receiving apertures 46 are alternated as shown in FIGS. 2 and 4 such that each of the first and second insert portions 16, 18 can universally be connected with any other insert portion having the same configuration of fastening elements 42. Consequently, any such combination of two insert portions may be removably connected to define the duvet insert 14 for the system 10.

This arrangement is schematically illustrated in FIG. 4 where an arrow 60 indicates removal and replacement of the second insert portion 18 with a third insert portion 18a that provides different quantifiable performance factors than the second insert portion 18 when such variations are desired (or the user of the corresponding side of the bed 20 changes). As noted above, each of the first and second insert portions 16, 18 are configured for connection to any other insert portion to provide a highly customizable set of quantifiable performance factors for the opposite sides of the system 10. It will be understood that even in embodiments where the type of fastening element 42 is modified, the alternation of fastening elements 42 along the length of the insert portions 16, 18 may be used to make sure any pair of selected insert portions may be successfully and removably coupled together.

[0042] Also shown in FIG. 4, each of the various insert portions 16, 18, 18a may also include a fill identification element 80. In the illustrated embodiment, the fill identification element 80 is a label connected to an outer surface of the corresponding insert portion. The label may contain printed information indicating the performance factors or materials specifications of that particular insert portion, so a user could readily identify a desired insert portion for his or her side of the bed 20. Alternatively, the label may include symbology or color-coding that can be associated with certain performance specifications (defined by the materials and the quantifiable performance factors exhibited by the insert). In other embodiments within the scope of the invention, one or more of the elements defining the insert portions 16, 18, 18a may be color-coded to provide performance specification information for a user, and these elements may include bindings, thread, trim, or the like. By adding the fill identification element 80 to the insert portions 16, 18, 18a, the proper configuration of the duvet cover system 10 is easier to achieve for users.

[0043] FIGS. 5 and 6A-6D illustrate various embodiments of the fastening elements 42 that may be used along the junction 40 between the first and second insert portions 16, 18 in accordance with several embodiments of the system 10. With reference to FIG. 5, the fastening element 42 of the first embodiment described above includes flexible straps 44 configured to be inserted through receiving apertures 46 and then secured to themselves using hook and loop fastener 48. This arrangement for the fastening elements 42 can be modified in other embodiments. To this end, FIG. 6A shows that the fastening elements 42 include a tie element 70 that is again inserted through a receiving aperture 46 before being secured to itself by tying, as illustrated, to thereby removably couple the first and second insert portions 16, 18. In another embodiment shown in FIG. 6B, the fastening elements 42 include a button 72 that engages with a button hole 74 to removably couple the first and second insert portions 16, 18. Turning to FIG. 6C, the fastening elements 42 in another embodiment include snap members 76 on each of the first and second insert portions 16, 18. FIG. 6D illustrates yet another embodiment in which the fastening elements 42 are defined by magnetic elements 78 located along the junction 40 and in the first and second insert portions 16, 18. It will be appreciated that still further embodiments of the invention are possible with other known fastening elements for removably coupling the first and second insert portions 16, 18. In preferred embodiments, such fastening elements 42 define a low profile and are defined by non-rigid and/or non-hardened materials such

that the fastening elements 42 are not discernable to users laying on the bed 20 underneath the duvet cover system 10.

[0044] With reference to FIG. 7, two graphical plots are provided to illustrate some test results of potential materials that may be used in some embodiments of the system 10. As described above, the system 10 advantageously provides different sleep experiences on opposite sides of the bed 20 because of the provision of the first and second insert portions 16, 18 that define at least two quantifiable performance factors that are different from one another. The inventors of the present application have discovered that many quantifiable performance factors can be desirable to tailor when forming a customized sleep experience for a user of the system 10, but at a minimum, the thermal retention value and the air permeability or “breathability” are two performance factors of high importance to achieving a desirable sleep experience. Several prior designs for duvet systems have attempted to provide different sleep experiences with just different thermal retention values, but as shown in the plots of FIG. 7, this does not often provide a truly customized and desirable sleep experience for a given user of the system.

[0045] On the left graphical plot in FIG. 7, several materials that may be used as fill materials for the first and second insert portions 16, 18 are shown with test results for a “CLO value” indicative of thermal retention caused by the fill material. These materials include white duck down, polyester microfiber, kapok, wool, soybean, silk, and bamboo. On the right graphical plot in FIG. 7, many of these same materials are also shown with test results showing a measure of air permeability caused by these same fill materials. These test results are shown using a consistent fill weight for the fill materials, but it will be understood that the test results would change based on variations in fill weight as well within the first and second insert portions 16, 18. What is made apparent by these graphs is the complete independence of these two quantifiable performance factors from one another, which illustrates why the prior duvet system designs have failed in some respects to actually provide customized desirable sleep experiences.

[0046] To this end, consider an example where a first user A desires a high thermal retention and low air permeability while sleeping, while a second user B desires a low thermal retention and high air permeability while sleeping. In a conventional design focused solely on thermal retention value, one solution would be to fill a first insert portion for first user A with polyester microfiber and fill a second insert portion 18 for second user B with silk. As shown on the left graphical plot in FIG. 7, this would provide the thermal retention desired by users A and B. However, as shown on the right graphical plot in FIG. 7, the silk and polyester microfiber both have a very high amount of air permeability, which means the first user A would not have a desirable sleep experience with the extra air flow/circulation caused by the high air permeability. When multiple quantifiable performance factors are considered in selection of fill materials and fill weights, only then can the users of a bed receive customized desirable sleep experiences when using the system 10 as set forth in this application. Moreover, when additional quantifiable performance factors such as loft amount, weight, texture, etc. are considered when selecting the fill materials and cover fabrics for the first and second insert portions 16, 18, the sleep experience provided to different users is much more desirable than anything pos-

sible with the conventional designs. Each material and each corresponding fill weight will change a number of the quantifiable performance factors, which means a wide variation in these materials and fill weights must be used to provide desirable sleep experiences to a high number of users. Only when considering two or more quantifiable performance factors does the duvet cover system **10** achieve the technical objectives noted above, as these needs for customizable sleep experiences have long gone unmet by the conventional designs. Thus, the system **10** of this invention provides technical advantages to users of the bed **20** that provide a meaningful positive difference in sleep experiences. Likewise, users who desire changed sleeping conditions with changing seasons can easily achieve the desirable sleep conditions in all seasons by replacing the insert portion on their side of the system **10** whenever necessary.

[0047] With reference to FIG. 8, an alternative embodiment of the duvet cover system **110** is shown. This embodiment of the duvet cover system **110** includes the same duvet insert **14** defined by first and second insert portions **16**, **18** as described in detail above, but combined with a different cover layer **112**. The cover layer **112** in this embodiment is a standard, end-opening duvet cover with a closure zipper **114** along the opening to shut the cover layer **112** following insertion of the duvet insert **14** into the pocket defined within the cover layer **112**. This embodiment of the system **110** achieves the same technical advantages and objectives as the first embodiment because of the first and second insert portions **16**, **18** defining different quantifiable performance factors customized for different users of the bed **20**. Furthermore, the fact that the duvet insert **14** is made up of separate portions connected together is not discernable to the users when laying on the bed **20**, nor is this apparent from outside the bed **20** because the loft factors are consistent across the width of the bed **20** (and a single, unitary pocket is advantageously provided in the cover layer **112** so as to not reveal that multiple insert portions are being implemented to fill the cover layer **112**). Therefore, the desirable aesthetic appearance of a conventional duvet is provided while also enabling customized, desirable sleep experiences for different users. It will be understood that the cover layers **12**, **112** shown in the Figures are but two examples of cover layers that could be used with the duvet insert **14** of this invention, and other known cover layers can be substituted in without departing from the scope of the invention.

[0048] Now turning with reference to FIG. 9, an alternative embodiment of the duvet insert **214** that may be used with other embodiments of the duvet cover system **210** is shown in detail. Much like the first embodiment described above, this duvet insert **214** includes a first insert portion **216** and a second insert portion **218** that are removably coupled along a junction **40** using a plurality of fastening elements **42**, thereby allowing each insert portion **216**, **218** to cover approximately half of the bed **20** when the system **10** is fully assembled. Each of the first and second insert portions **216**, **218** is formed by a respective cover fabric and fill material, and the construction is such that the insert portions are made up of a plurality of so-called “quilt boxes” **92**, **96** that may be about 7 inches in width, for example, with stitching **90**, **94** provided along the boundaries between each of the quilt boxes **92**, **96**. This construction is one known type of construction for blankets and comforters.

[0049] Each of the quilt boxes **92** on the first insert portion **216** is joined to adjacent quilt boxes **92** by the stitching **90**,

and each of these quilt boxes **92** is filled with the fill material and weight designed to provide the set of quantifiable performance factors desired at the first insert portion **216**. As set forth above, a label or some other type of fill identification element **80** may be provided to show to a user the performance specifications of the first insert portion **216**. Similarly, each of the quilt boxes **96** on the second insert portion **218** is joined to adjacent quilt boxes **96** by the stitching **94**, and each of these quilt boxes **96** is filled with the fill material and weight designed to provide the set of quantifiable performance factors desired at the second insert portion **218**, these typically being different from the set of performance factors for the first insert portion **216**. A fill identification element **80** in the form of a label is also provided at the second insert portion **218**. Accordingly, the duvet cover system **210** of this embodiment continues to provide the desirable aesthetic appearance of a conventional duvet while also enabling customized, desirable sleep experiences for different users.

[0050] It will be appreciated that other embodiments of the system similar to the one shown in FIG. 9 may include additional design changes. In this regard, a single-piece version of the duvet insert may be provided having similar construction with quilt boxes as in the duvet insert **214** of FIG. 9. In such an alternative embodiment, the junction **40** and fastening elements **42** are omitted but the quilt boxes on the opposite sides of the duvet insert **214** continue to be defined by cover fabrics and fill materials and weights that collectively are unique for each side of the duvet insert **214**. To this end, despite being constructed as a single-piece duvet insert, this embodiment would continue to provide customized, desirable sleep experiences for different users because of the quilt boxes on the two sides of the duvet insert providing at least two quantifiable performance factors that are different from those on the other side of the duvet insert. Other similar methods of providing a “half-and-half” distinctive fill of the two sides of a duvet insert will also be possible in further embodiments consistent with the scope of this invention.

[0051] While the present invention has been illustrated by a description of various embodiments and while these embodiments have been described in considerable detail, it is not the intention of the applicant to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. Thus, the invention in its broader aspects is therefore not limited to the specific details, representative apparatus and method and illustrative example shown and described. Accordingly, departures may be made from such details without departing from the spirit or scope of applicant’s general inventive concept.

What is claimed is:

1. A duvet cover system for covering a bed, the system comprising:
  - a cover layer configured to receive a fill layer in the form of a blanket or comforter, the cover layer also being configured to at least substantially enclose the fill layer and provide a desired aesthetic appearance to the duvet cover system; and
  - a duvet insert defining the fill layer, the duvet insert including a first insert portion and a second insert portion removably connected to one another along a junction such that the first insert portion covers a first

side of the bed and the second insert portion covers a second side of the bed when the duvet cover system is spread over the bed,

wherein the first insert portion includes a first fill material having a first fill volume to thereby define at least two quantifiable performance factors for the first insert portion, including a first thermal retention value and a first air permeability value, the second insert portion includes a second fill material having a second fill volume to thereby define at least two quantifiable performance factors for the second insert portion, including a second thermal retention value and a second air permeability value, and the quantifiable performance factors of the first and second insert portions are different from each other to provide different sleep experiences for users located on first and second sides of the bed under the duvet cover system.

2. The duvet cover system of claim 1, wherein another of the quantifiable performance factors for the first insert portion is a first loft amount generated by the first fill material and the first fill volume, another of the quantifiable performance factors for the second insert portion is a second loft amount generated by the second fill material and the second fill volume, and the first and second loft amounts are substantially equal such that the duvet cover system defines a consistent aesthetic appearance on first and second sides of the bed when the duvet cover system is spread over the bed.

3. The duvet cover system of claim 1, wherein the first and second insert portions are removably connected to one another by a plurality of fastening elements that are spaced apart from one another along a length of the junction.

4. The duvet cover system of claim 3, wherein each of the plurality of fastening elements further comprises:

- a flexible strap extending from one of the first and second insert portions; and
- a receiving aperture formed on the other of the first and second insert portions, the flexible strap extending through the receiving aperture and then being secured in position on the one of the first and second insert portions to hold the first and second insert portions together.

5. The duvet cover system of claim 3, wherein the plurality of fastening elements is defined by at least one of: hook and loop fastener elements, ties, buttons, snaps, and magnets.

6. The duvet cover system of claim 1, wherein the cover layer further comprises a single, unitary pocket configured to receive and substantially enclose an entirety of the duvet insert.

7. The duvet cover system of claim 1, wherein the first and second fill materials include at least one of: duck down, polyester, wool, kapok, soybean, silk, and bamboo.

8. The duvet cover system of claim 1, wherein the at least two quantifiable performance factors for the first and second insert portions further include a loft amount, weight, and/or texture.

9. The duvet cover system of claim 1, wherein the first insert portion further includes a cover fabric that encloses the first fill material, the second insert portion further includes a cover fabric that encloses the second fill material, and the cover fabrics of the first and second insert portions help define the at least two quantifiable performance factors.

10. The duvet cover system of claim 9, wherein the at least two quantifiable performance factors for the first and second insert portions further include wicking and/or temperature regulation.

11. The duvet cover system of claim 9, wherein the cover fabrics for the first and second insert portions include at least one of: cotton, cotton blends, microfiber polyester, and Lyocell.

12. The duvet cover system of claim 1, wherein the first and second insert portions are removably connected to one another by a plurality of fastening elements, which are defined by non-hardened or non-rigid materials such that a presence of the fastening elements along the junction cannot be detected by users located on the bed and under the duvet cover system.

13. The duvet cover system of claim 12, wherein the first and second insert portions each define a plurality of peripheral edges, one of which is located along the junction, and wherein all others of the plurality of peripheral edges do not include any fastening elements for connecting the first and second insert portions together.

14. The duvet cover system of claim 1, wherein the cover layer includes a decorative pattern to provide a desired aesthetic appearance to the bed when the duvet cover system is spread over the bed.

15. The duvet cover system of claim 1, wherein each of the first and second insert portions includes a fill identification element that identifies a performance specification defined by the at least two quantifiable performance factors for the insert portion.

16. A duvet cover system for covering a bed, the system comprising:

- a cover layer configured to receive a fill layer in the form of a blanket or comforter, the cover layer also being configured to at least substantially enclose the fill layer and provide a desired aesthetic appearance to the duvet cover system; and
- a duvet insert defining the fill layer, the duvet insert including a first insert portion including a plurality of first quilt boxes defined by a first cover fabric, and a second insert portion including a plurality of second quilt boxes defined by a second cover fabric, the first and second insert portions being positioned such that the first insert portion covers a first side of the bed and the second insert portion covers a second side of the bed when the duvet cover system is assembled and spread over the bed,

wherein the plurality of first quilt boxes are filled with a first fill material having a first fill volume to thereby define at least two quantifiable performance factors for the first insert portion, including a first thermal retention value and a first air permeability value, the plurality of second quilt boxes are filled with a second fill material having a second fill volume to thereby define at least two quantifiable performance factors for the second insert portion, including a second thermal retention value and a second air permeability value, and the quantifiable performance factors of the first and second insert portions are different from each other to provide different sleep experiences for users located on first and second sides of the bed under the duvet cover system.

17. The duvet cover system of claim 16, wherein the first insert portion and the second insert portion are removably connected to one another along a junction.



**18.** The duvet cover system of claim **17**, wherein the first and second insert portions are removably connected to one another by a plurality of fastening elements that are spaced apart from one another along a length of the junction.

**19.** The duvet cover system of claim **16**, wherein another of the quantifiable performance factors for the first insert portion is a first loft amount generated by the first fill material and the first fill volume, another of the quantifiable performance factors for the second insert portion is a second loft amount generated by the second fill material and the second fill volume, and the first and second loft amounts are substantially equal such that the duvet cover system defines a consistent aesthetic appearance on first and second sides of the bed when the duvet cover system is spread over the bed.

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